

## **ABSTRACT OF THE DISCLOSURE**

Systems and methods are described for guaranteeing the availability of per thread storage in a distributed computing environment. A method includes detecting creation of a thread, the thread running on a processor that is part of a distributed computing environment; after detecting the creation of the thread, receiving a request from a requesting software to allocate a thread local storage associated with the thread; scanning a data structure for a smallest suitable class size, the data structure including a list of thread local storage address size classes, each thread local storage address size class having a plurality of thread local storage addresses; determining whether the smallest suitable size class is found; if the smallest suitable size class is found, determining whether thread local storage of the smallest suitable size class is available; if the smallest suitable size class is found, and if thread local storage of the smallest suitable size class is available, selecting a thread local storage address from among those thread local storage addresses belonging to the smallest suitable size class; and if the smallest suitable size class is found, and if thread local storage of the smallest suitable size class is available, returning the thread local storage address to the requesting software. A method includes detecting destruction of a thread, the thread running on a processor that is part of a distributed computing environment; after detecting the destruction of the thread, receiving a request from a requesting software to deallocate a thread local storage associated with the thread; scanning a data structure for a smallest suitable size class, the data structure including a list of thread local storage address size classes, each thread local storage address size class having a plurality of thread local storage addresses; determining whether the smallest suitable size class is found; if the smallest suitable size class is found, determining whether thread local storage of the smallest suitable size class is available; if the smallest suitable size class is found, and if thread local storage of the smallest suitable size class is available, creating a new entry of the smallest suitable size class; if the smallest suitable size class is found, and if thread local storage of the smallest suitable size class is available, denoting the new entry in a thread local storage address of the smallest suitable size class; and if the smallest suitable size class is found, and if thread local storage of the smallest suitable size class is available, inserting the new entry into the data structure. A method, includes receiving a request from a requesting thread for a thread local storage address, the thread local storage address belonging to an owning thread running on a processor that is part of a distributed computing environment; searching a data structure for the thread local storage address using a code identifying the owning thread; and returning the thread local storage address, that belongs to the owning thread, to the requesting thread.

An apparatus includes a processor; and a private memory coupled to the processor, the private

memory including a data structure having a list of thread local storage address size classes wherein each thread local storage address size class includes a plurality of thread local storage addresses.

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